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# THE DECORATOR AND FURNISHER.

## THE ART OF ETCHING.\*

EXPLAINED AND ILLUSTRATED: WITH REMARKS ON THE ALLIED PROCESSES OF DRYPOINT, MEZZOTINT, AND AQUATINT.

BY H. R. ROBERTSON.

### RE-BITING.



THE purpose of re-biting is to deepen such lines as are found, on the plate being proved, to be insufficiently bitten. The great advantage of this process is that it tends to finish the plate without the addition of more lines, and so helps to keep the quality of freshness which the addition of more work is likely to impair. It is a very delicate operation and is performed at some risk of foul biting. There are two methods of preparing the plate for the process—with the dabber and with the roller. The plate must be most thoroughly cleaned, first with spirits of turpentine and afterwards with bread, chloroform, or a solution of pearlash. If the last is used the plate must be well rinsed

afterwards with pure water. Whiting is then to be rubbed into the lines and the surface wiped clean with chamois leather. This being done, heat a spare piece of copper and melt some etching ground on it, then with a silk dabber take up a small quantity of the ground and dab it very lightly all over the plate which is to be re-bitten. This plate must also have been previously heated.

When the roller is employed instead of the dabber an extra piece of copper is used as before, but neither of the plates is to be heated. A little of the liquid etching ground (of the consistency of cream) is put on to the roller with a palette knife. The roller is then passed backwards and forwards over the extra plate till it is evenly and thinly charged with the ground, when it is transferred to the etched plate, over which it is lightly passed many times in all directions. The plate must now be heated slightly, and when cool will be ready for biting-in and stopping-out again as before. The etcher cannot be too careful to keep his plates and roller free from dust. Should any spots of dust appear in the ground they must be painted over with stopping-out varnish. If the liquid etching ground is too thick to work easily, a few drops of oil of lavender must be added. The use of the roller is generally preferred to that of the dabber, but does not answer when the plate is uneven in places, as is often the case. The roller is usually four or five inches long. I had an extra-sized one made for me in Paris about a foot long, but I found it nearly useless, for the reason given above. In Paris there are skillful workmen who constantly prepare artists' plates for re-biting. Some etchers like the use of the roller so much as to prepare their plates with it not only for re-biting but for laying the ground in the first instance. If lines are very shallow indeed it is impossible to prevent their getting filled up with the etching ground, and it will then be found necessary to have recourse to re-etching, which is the subject of our next chapter.

### RE-ETCHING.

Re-etching is the adding of a fresh set of lines after the plate has been bitten-in and the first etching ground cleaned off. A fresh ground has to be laid, and for this purpose transparent etching ground is generally used, which is applied with the dabber in the ordinary manner. Rather more ground must be applied than in the first instance, and it must be well worked into the old lines. Any parts of the plate that do not require fresh work should be further protected with a coat of Brunswick black. I have often found that the liquid chloroform ground answers the purpose better than transparent etching ground, as when not smoked it is quite transparent enough for one to see what lines are already on the plate, and its color being brown, the new lines are more easily seen. Where the lines are already deeply bitten, liquid etching ground is apt to fill the lines but to leave their edges very thinly covered, so thinly in fact that when the plate is put into the bath, the acid often finds its way through at these places, with the effect of widening the lines. Of course this may on occasion be an advantage, but it is not often in the deeply bitten parts that fresh lines are requisite.

The process of biting-in and re-etching is the same as has been already described.

### ALTERATIONS AND CORRECTIONS.

We have already detailed how the effect of an etching may be altered by deepening the lines or by the addition of more

work, and we have now to speak of such correction as may have to be done by reducing or effacing faulty passages.

The scraper and the burnisher are used when isolated passages are to be reduced in strength, care being taken that the scraper is kept constantly sharpened and the burnisher brilliantly polished. If, while printing from the plate, or in polishing it with crocus powder, etc., it should get scratched through the accidental presence of small particles of grit, the burnisher will generally be found sufficient to remove the scratches. When a large part of the plate is slightly over-bitten, as often happens with a sky, it may be rendered paler by being rubbed with a thick stick of charcoal and olive oil. If water be substituted for olive oil, the charcoal will act more powerfully. A stronger means still is a piece of Ayr stone used in the same manner as the charcoal. This is a kind of stone from which hones are sometimes made. Should it be necessary to efface any part altogether, coarse sandpaper may be used, the surface being gradually restored with finer sandpaper, charcoal, and crocus powder. My own practice has gradually tended to the use of the scraper on nearly all occasions, to the exclusion of the other materials that I have mentioned. In very dark passages the burnisher may often be used effectively.

Should one require to efface a great deal of very deeply bitten work, it will be better to get it done by a professional plate maker, as the task of lowering the surface of copper is extremely tedious.

The plate will stand a good deal of hollowing in parts without any effect on the printing, as long as the dip is gradual, but should there occur anything of the nature of a hole, it must be hammered up from behind.

By placing the plate between the legs of the compasses, with the blunt point on the spot to be effaced, you can easily mark on the back with the sharp point the place immediately opposite to it. The plate is then placed with the part to be effaced on the anvil, and struck at the back with the round end of the hammer, till the line or hole is filled up. The jarring of the plate in the hand, and the noise of the hammer, will sufficiently indicate when the part of the surface immediately opposite to where you strike is fairly on the anvil or not. Before, however, you proceed to the actual hammering, the work on the part to be effaced must be carefully taken out so as to leave a smooth clean hollow.

When the part to be effaced is very minute, a steel punch is used, and the plate must then be held on the anvil by an assistant, whilst you hold the punch steadily with the left hand on the spot marked at the back with the compasses, and strike it gently but smartly with the hammer till the place is filled up.

However neatly the operation of hammering up is performed, the lines of the etching close round the part knocked up will be more or less weakened or effaced, and will want re-etching with the transparent ground, or working up to their original strength with the graver. It often happens also that the part effaced is raised above the level of the plate, in which case it must be brought down with the scraper, and afterwards finished with the charcoal and burnisher.

### SOFT GROUND ETCHING.

Etching on soft ground is a process that was formerly much employed to imitate chalk or pencil drawings. For this purpose, however, it has been entirely superseded by lithography, which has the advantages of being more easily executed and more cheaply printed than the older process. It may, however, be occasionally found useful as an auxiliary to etching when certain surfaces are to be represented.

Soft ground for winter use is made by adding one part of lard to three parts of common etching ground, but for warm weather less lard is required.

The process is as follows:—Draw the outline of your subject faintly on a piece of thin paper having a grain, which must be at least an inch larger every way than the plate. The ground is laid and smoked in the same way as the hard etching ground, taking care that nothing touches it after it is done till the paper is laid on it. The paper must have been first wetted, and then spread cautiously on the ground, the edges being turned over and pasted down to the back of the plate; in a few hours the paper will be dry and stretched quite smooth. Resting your hand on the bridge, take a pencil and draw your subject on the paper exactly as you wish it to be, pressing strongly for the darker touches, and more lightly for the delicate parts. Use a softer or harder pencil according as you find the ground more or less soft, which will depend on the heat of the weather or the room you work in, but remember always that the softer the ground the softer should be the pencil. When the drawing is finished lift up the paper carefully from the plate, and wherever you have touched with the pencil the ground will stick to the paper, leaving the copper more or less exposed. The plate is then bitten-in in the ordinary way, but if re-biting should be required the hard etching ground is to be used. If the etching has been successfully done, a printed proof will be exactly the same as the drawing made by the soft etching ground sticking to the under side of the paper, which is indeed itself a proof

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how far you have succeeded. The paper used may have a coarse or fine grain, or papers of different grain may be used in the same design: smooth paper gives no result whatever.

### ETCHING IN THE BATH, AND OTHER METHODS.

The ingenious plan of etching from nature on a plate while it is in the bath was the invention of Mr. Seymour Haden. The advantages of the process are that unbroken gradation is obtained in the depth of the lines, and that the trouble of repeated stoppings-out is avoided. It was considered by many that this clever method was to inaugurate a new era in the art, and that it would be gradually adopted by all. It has really been tried by very many etchers but adopted by few. The fact is that the gain of innumerable gradations in the depth of the lines is rather of an imaginary nature; it being found that half a dozen stoppings-out will, if done with judgment, give as much gradation as is appreciable in the printing. As has been explained elsewhere, the depth of a line is not always in proportion to the time of its exposure to the acid, and the effect of gradation of tone is due to many causes of which depth of line is only one.

One objection to the process is that it admits of no alteration or correction while the plate is in progress, the result inevitably being that many plates done in this way turn out utter failures. The horizontal position of the plate, and a slight difficulty in seeing where the point of the needle is, are found in practice not such insignificant matters as they may appear. Mr. Haden's own etchings are distinguished rather for vigor than for much gradation in the biting, and to judge by the result, one would not suppose that many of them are etched in the bath. Mr. Hamerton has called attention to an essential point to be noted as regards the calculation of time if this process is used. It is that "whilst the plate is in the bath the differences are always lessening. For example, a line laid at the very beginning, and a line laid an hour afterwards, are, when the plate has been an hour and a half in the bath, of very different value, but as the plate remains longer and longer in the bath they are constantly approaching in value. This has to be continually taken into account, and it adds to the difficulty of the process."

To carry out Mr. Haden's plan it is necessary to have a thick drawing-board made with a well in it, which must be thoroughly protected by repeated paintings with Brunswick black. This drawing-board is to be fitted with a three-legged stand similar to those used for photographic cameras, to enable it to be kept horizontal under all circumstances. A flat piece of wood laid across the well is used as a rest for the hand and to avoid contact with the acid.

Without actually working in the bath it is possible to avail oneself of that part of the method which obviates stopping-out. To do this the work with the needle is divided into separate stages, commencing with the darkest parts of the subject. These darkest lines are etched and bitten-in for a sixth of the whole

time contemplated. Then the set of lines next in depth are etched, and the plate being again put into acid both sets of lines get now bitten-in. This process is repeated till at last the faintest lines have had one-sixth of the whole immersion which the deepest lines have had, and the biting-in is completed.

There is also a simple way of availing oneself of the other advantage in Mr. Haden's method—namely, the simultaneous etching and biting-in of the subject from nature. This is to bite-in the lines by painting on the etching with a brush charged with a very strong mordant—for instance, nitrous acid nearly pure. A sponge with water is used to check the biting-in at any moment. In this method the darkest lines are generally done first, though there is nothing to prevent the etcher modifying his work as he proceeds, and even adding at the last very dark lines where no work had hitherto been done at all.

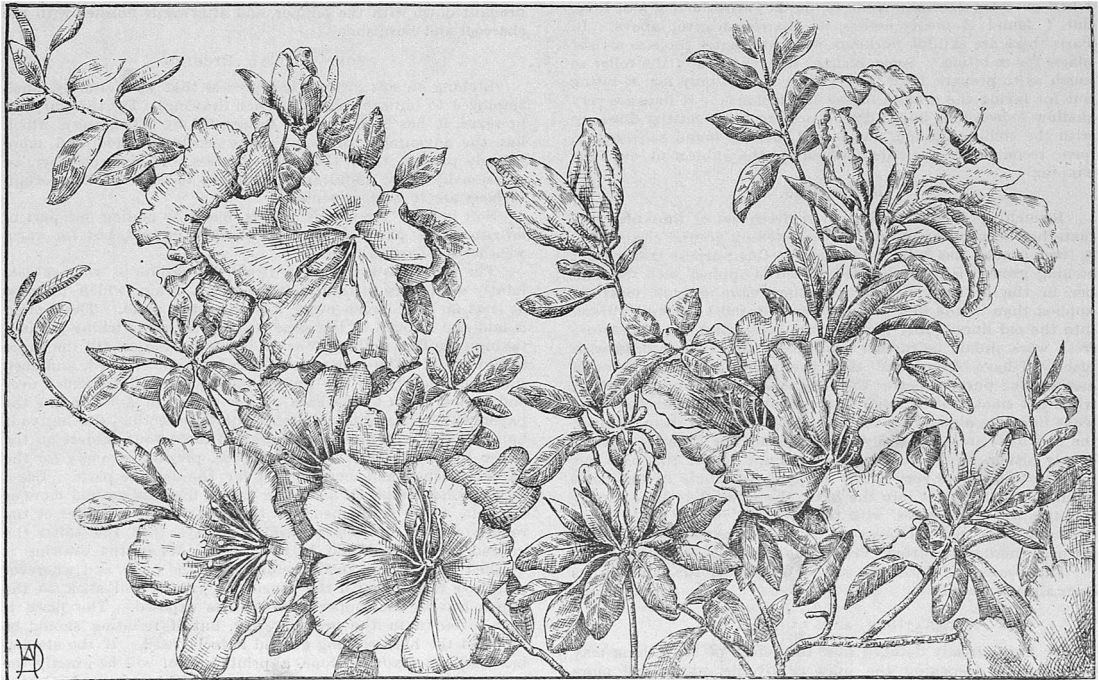
### PRINTING.

The process of printing is as follows:—The plate is first warmed by being laid on a sheet of iron, under which small gas jets are kept constantly burning; then the ink is spread on to the surface and into the lines with a dabber. The superfluous ink is next wiped off with a coarse muslin rag, care being taken not to wipe the ink out of the lines while removing it from the surface. Simple as this appears when done by a practiced hand, it really requires considerable skill. The palm of the hand is then rubbed over with a little whitening, and a final polish is given to the plate with it. The plate is now placed on the traveling board or bed of the press, and on it is laid the paper, which should have been previously damped; over all are laid several thicknesses of flannel. On the handle of the press being turned the cylinders revolve, and the traveling board passes between them, carrying the plate with it. By the pressure thus obtained the paper is driven into the lines on the plate, the process being facilitated by the elasticity of the flannel. When the plate has thus passed through the press it will be found that the paper adheres so closely to the plate that much care is required not to tear the paper in removing it. This should be done by lifting it slowly from one corner.

A proof obtained by wiping the plate as clean as possible is said to be "naturally" printed, and the impression thus obtained is said to show "the state of the plate."

"Artificial" printing consists, firstly, in leaving a tint of ink on part of the plate, instead of cleaning it thoroughly; and, secondly, in the process called "retroussage." After the plate has been inked and wiped clean, it is gone over with a piece of very soft muslin and a certain amount of ink is thus brought up out of the lines, which gives in printing a soft tint round each line. The whole effect is thus enriched and softened, and the hard wiriness so often complained of in etchings is neutralized.

The question as to the propriety of the use of *retroussage* has been so much discussed by the critics as to justify my in-



A PANEI, BY HARRY A. DEANE.

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serting the following remarks on the subject by Mr. C. O. Murray, which I quote from a letter that appeared in the *Etcher*:—"Is the result called in question a desirable one? Can it be better or more easily produced in some other way? In the case of an etching, does it admit of the requisite number of impressions being taken with the requisite identity?"

"Firstly, then, the result of *retroussage* is surely desirable. What is it but the result aimed at and attained by Rembrandt (though probably by another method) in all his best impressions? To say that there is no tint between the lines in them—as the writer in the *Pall Mall Gazette* says—is, we know, the wildest mistake. Again, it is in essence the same result aimed at and so well attained in a few impressions in the charming drypoint of Rembrandt's time and our own.

"Can it be better done in any other way? 'We know of none' is the practical answer that all concur in.

"Lastly, does it print well, and with the requisite identity of impression? The simplest answer to this is got by inspecting several copies of any one of the first-class serials that publish etchings by the thousand. They are probably all treated by *retroussage*, and the identity of impression is perfectly satisfactory. True, they are not all absolutely alike. \* \* \* It is inherent in all intaglio printing that no two impressions can be identically alike. It must be done by hand. Nay, the ink must be made up fresh every day, and varied to the character of the plate. On its color and quality the result largely depends. Try as we may, we cannot dispense with a good head and hands in that important co-operator—the printer. But is that so much to be regretted? Does it not rather lend a charm to our combined art, that brains are needed to the making not merely of the plate, but of every impression."

The selection of a suitable paper on which to print his etching should be a matter of careful consideration to the etcher. In some cases experiment only will enable him to decide what paper will best suit his subject. The papers most generally used are Japanese, Dutch, and that known as Whatman's Imitation Creswick. The last is a stout, slightly tinted drawing paper, with just enough grain on the surface to contrast with the smooth effect produced where the plate has been impressed on it. Plate paper is what is commonly used for engravings, and, being very easy to print with, is useful to a beginner; it answers perfectly to show at any time what work is on a plate, but is not suitable for ultimately rendering the best possible effect of an etching.

If a hard paper be used, it will print better after the surface has been rubbed smartly with a moderately stiff clothes-brush. This is to be done after it has been well damped and just before it is put through the press.

A counterproof or off-track is an impression taken from another impression while the ink is still wet. These counterproofs are taken to enable the etcher to compare the plate with an impression from it without the trouble of using a looking-glass, ordinary impressions being, of course, reversed.

The color of the ink is a matter of similar importance to the selection of the paper. Where a plate has been rather less bitten than was intended, or where brilliancy is particularly needed, it will often be found best to print in a pure black. On the other hand, if a plate is over-bitten, it may be much helped in the printing by the addition of a good deal of bistre or burnt sienna to the black. Burnt linseed oil, thick or thin, as may be required, is used as the medium in which to grind up the black that is supplied in powder for making the ink. There are several kinds of black in use:—Frankfort black, lamp black, charcoal, noir léger, and others. Judgment in preparing the ink is half the battle in printing. The black requires a great deal of grinding with a muller on a slab of stone, for if any grit remain it is sure to scratch the plate. A fairly good ink is to be bought ready made, but should always be re-ground previous to using.

It is well that an etcher should print his own etchings, but it is also well that a beginner should know that there is nothing more misleading than a badly printed proof, and so, till he has attained proficiency, he had better get his plates proved by a good printer.

Copper, being a soft metal, wears away quickly under the operation of printing, and the earliest impressions being the sharpest are of the most value in the market. This extra value has become somewhat of a fanciful nature since the recent invention of coating the plate with an extremely thin electro deposit of iron, commonly called steel-facing. As the plate can easily be re-steelled, when the original steel-facing shows signs of wear, this process enables great numbers of impressions to be taken without injury to the plate. In those cases, however, where the effect of the plate depends on the burr raised by drypoint work, the steel-facing is by no means so certain a protection, it being impossible to predict what number of good impressions a plate will yield. The average cost of steel-facing is one penny per square inch.

Many people think that the difference between an early and a much-worn state of a plate is simply that the latter is throughout not so black as the former, and therefore that the difference is not very important. The fact is that the extreme darks be-

come grey through the work wearing smooth and the most delicate lines disappear altogether, while those of medium depth do not apparently alter. Thus the relation of the tones is completely destroyed, and so it happens that impressions from a worn-out plate are rightly of little value in the eyes of a connoisseur.

### LABOR-SAVING DEVICES.

Before enumerating and explaining the following methods of economizing time it will be as well to give the beginner a general caution against overmuch dependence upon them. They are not found to be so advantageous in general practice as by description they would appear to be; nevertheless, all of them have at some time or other been used with the happiest effect. Should the beginner avail himself of any of these devices, he will probably be told by some literary friend, with hard and fast theories about art, that such practices are "illegitimate," and that however satisfactory the result attained may be, it is false etching. On one occasion, when painting in oils with a brush that had been trimmed with scissors to a particular shape, I was solemnly informed that a brush of that shape was "illegitimate," but I did not mind much.

The large number of lines to be drawn by the needle-point in shading any considerable space have suggested various devices to get over the ground more quickly. First amongst these is the idea of putting two or more needles besides each other in one handle, and so laying parallel strokes at the same time. When a broad gray line is required, two needles thus put together will sometimes do it better than anything else, and in a dark background to a head an arrangement of five or six needles will certainly save time, and may be so used in conjunction with the free work of a single point, as not to be objectionable. It is chiefly in very large plates that this arrangement of needles has been found useful, as, for instance, in Mr. Macbeth's etching after Mason's "Harvest Moon," where much of the background and all of the sky was done in this manner.

The next hint on the subject that I would give, is that the etcher may frequently make use of the foul biting that happens accidentally. Foul biting is the expression used when the acid has found its way through the ground and made a tint, composed of dark spots and stains, upon the surface of the plate. One's first feeling is sure to be disgust at an accident which costs much time to repair, and is apt to spoil the freshness of the work. The scraper and burnisher are employed either to remove the foul biting altogether, or to give the necessary gradations, in case any of it is to be purposely left.

The etcher having at some time made good use of this accidental foul biting, will naturally be led to do something of the sort deliberately, when he thinks that parts of an etching might be improved by it. The best mode is to heat a clean plate and to squeeze out some etching ground upon it, and then with the dabber to carefully transfer to the plate to be operated upon just so much of the ground as will partly coat the copper. This leaves a granulated appearance caused by the texture of the dabber. The plate is not to be heated again after the ground is laid, and those parts not to be bitten must be well covered with stopping-out varnish.

Another plan by which the texture of silk may be similarly employed is as follows: Ground the plate with soft etching ground, then place a piece of silk over the plate, pass a rolling-pin over it to make it adhere equally all over the surface, then peel it off. A tessellated pattern will be left on the plate, the silk having taken off the ground wherever the threads pressed upon it; stop out and bite in as required. I have seen some specimens of this method in the illustrations to Mr. Archer's book on the Antiquities of London, and the effect produced is admirable in some of the plates where stonework in light or half tone is represented.

Another process of the same kind is used by M. Legros. The ground is laid as for ordinary etching, and a piece of sandpaper is placed face downwards on the plate, which is then passed between the rollers on the printing press with sufficient pressure for the grains of sand on the paper to pierce the ground. The plate is then proceeded with as before. The degree of fineness of the sandpaper employed will, of course, regulate the grain produced on the copper. This method of obtaining tone is useful for representing night scenes, and I may refer to plate 14 of Mr. Urwick's 104th Psalm as a good example of its adaptation. The drawback to this employment of sandpaper is that, when much used, the tone produced by it suggests that of lithography, which indeed owes its grain to the stone being roughened with sand, preparatory to being drawn upon.

Aquatint, which is fully described elsewhere, is often used in conjunction with etching; the effect is such as would be produced by adding washes of Indian ink to a pen and ink drawing. Flat tints may be added with the roulette, as in mezzotint engraving, of which a capital example is given by Mr. Hamerton in the first edition of "Etching and Etchers." The plate is by Villevielle, and is entitled "En Picardie."

M. Lalanne mentions the use of flowers of sulphur for the purpose of harmonizing or increasing the weight of a tint. The



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sulphur is mixed with oil so as to form a paste thick enough to be laid on with a brush. By the action of these two substances the polish on the plate is destroyed, and the result in printing is a fresh and soft tint, which blends agreeably with the work of the needle. Differences in value are easily obtained by allowing the sulphur to remain on the plate for a longer or shorter time. This species of biting acts more readily in hot weather, a few minutes being sufficient to produce a firm tint. The corrosions produced in this way have quite a dark appearance on the plate, but they produce much lighter tints in printing. If the result should not prove satisfactory, this sulphur tint can be effaced with charcoal, as the copper is but slightly corroded, or the burnisher may be used to reduce any parts which are too dark.

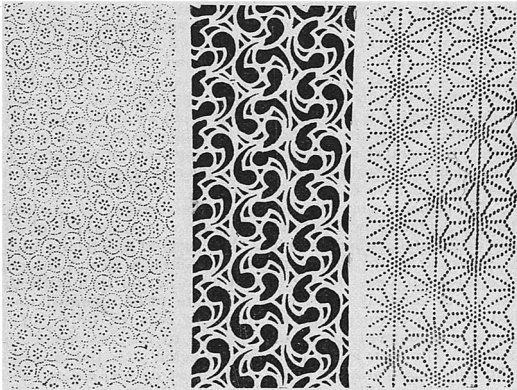
A very slight tint may be obtained by merely destroying the polish of the plate with charcoal; some writers recommend rubbing the plate with charcoal under water as the best way of cleaning it before laying the ground. Rubbing the plate with sandpaper is sometimes adopted as a means of imparting a stronger tint than that produced with charcoal, but it is apt to look dirty unless managed with great judgment.

The assistance that may be rendered to an etching in the printing, I have mentioned when treating of that part of my subject.

### DRYPOINT.

Drypoint etching is a misnomer; the word etching is derived from the Dutch *etsen*, and refers to the biting-in of the acid.

Drypoint is a species of engraving in which the lines are cut into the copper by a pointed steel tool. The lines thus cut raise a ridge, technically called the burr, and this ridge holds a good deal of ink when the plate is printed. The burr can be scraped away when desirable, leaving the lines clean and resembling in appearance very lightly-etched work. Drypoint has a peculiarly soft and rich effect, and is admirably suited for rendering certain



JAPANESE STENCILS, ONE-FOURTH FULL SIZE.

textures, such as fur and velvet. Some artists, when etching figure subjects, prefer to leave the flesh to be done afterwards with the drypoint. Great delicacy is insured by this means, but at some cost of unity of effect; to a practised eye the flesh does not seem to belong to the rest of the plate.

One advantage to a beginner that drypoint possesses over etching is that he can see how the plate is progressing all the time he is at work. He has only to rub some black mixed with tallow into the lines, and the effect is shown as it will appear when printed. Considerable strength in the fingers is required to work successfully in drypoint; and the fact that so much pressure is being employed makes it difficult to change the direction of the line suddenly. In the process we therefore miss that perfect freedom and play of line which gives such a charm to etching.

To begin with, it is convenient to lay a ground as for etching, and smoke the plate, and to trace the leading lines of the design on the ground, taking care to cut lightly into the copper with the point. Then remove the ground and continue your drawing, guided by these general outlines.

### MEZZOTINT.

The process of mezzotint engraving consists in passing over a plate of steel or copper with an instrument called a cradle, by which a burr is raised on every part of the surface in such quantity that, if filled in with ink and printed, the impression would be one mass of the deepest black. On the plate so prepared the lights and middle tints are burnished or scraped away, leaving it untouched for the darkest shades.

The tools employed in this art are the grounding tool or cradle, roulettes, burnishers, and scrapers. The grinding tool has the shape of a shoemaker's knife with a fine serrated edge. The roulette is a small toothed wheel set in a handle.

The first step of the process is to mark upon the plate the limits of the design, and within these limits the grounding tool is employed. It is pressed upon in an even, steady, and moderate manner, and with a rocking motion advanced over the plate, till the whole space within the limits is covered with lines. These lines are crossed by others at right angles. The two diagonal directions are then taken. The whole series of lines is then repeated several times, taking care not to enter the same lines twice; till, at length, by the extreme closeness of the lines, the original surface of the copper is entirely destroyed, and if an impression were taken from the plate it would be completely black. This operation is called laying the mezzotint ground.

To the ground thus formed must now be transferred the outline of the design. The plate is blackened by the smoke of a taper, and the design is transferred to it by means of tracing paper prepared with red chalk. The red chalk outlines are rendered permanent by going over them with a blunted drypoint on the copper. It is usual to commence by taking out the strongest lights with a scraper, after which the burnisher is applied to polish the surface. As the work proceeds frequent proofs should be taken, and if too much of the ground has in any case been removed, it must be again formed by a roulette or by a small grounding tool.

Etching is much used as an auxiliary to mezzotint. The outline is frequently etched at the very commencement, before even the mezzotint ground is laid, and by different engravers it is used in varying degree, either to give precision in places or to assist the appearance of particular textures.

### AQUATINT.

Aquatint is a variety of etching in which the acid is applied to large spaces instead of to lines on the surface of the metal. It bears somewhat the same relation to a washed drawing in Indian ink that an ordinary etching does to a pen-and-ink drawing. About sixty years ago it was much employed for topographical views, but has since been gradually abandoned. It is, however, at the present time used occasionally in combination with etching. In Paris there have lately been some very dainty illustrations produced in aquatint by Paul Avril (notably those to Uzanne's "L'Eventail"), showing its availability for figure work to a degree hitherto unsuspected.

The principle upon which aquatint is executed may be thus explained:—The copper plate, cleaned in the customary manner, is sprinkled evenly with a resinous substance in powder; the plate being warmed, the resin adheres in a granulated form to the plate; it is immersed in the acid, which immediately attacks the metal in all the innumerable interstices where it is left uncovered by the resin. If an impression were taken of the plate the effect would be like a wash of Indian ink, and the different shades are produced by the longer or shorter time during which the acid is allowed to act upon the plate.

In the ordinary aquatint process the plate is covered with a common etching ground, and the outlines of the design are etched in the usual manner. The ground being removed, the plate is slightly rubbed with the oil-rubber. It is then dusted with gum copal or other resinous substance reduced to a very fine powder. The copal should be tied up in a muslin bag, and should be scattered by striking the hand which holds it against a ruler held in the other hand. By this means a very equal shower of dust may be obtained which will adhere in some degree, on account of the oiliness of the plate; but any which is loose may be removed by striking the edge of the plate against a table. The plate should then be slightly warmed, till the copal changes color, which will show that the adhesion of the gum to the plate is sufficient to resist the acid. If any part of the plate is to appear untinted it must be covered with the stopping-out varnish before being immersed in the acid bath. As soon as the lightest shade is produced, the plate is taken out of the bath, and every part sufficiently bitten is stopped out with the varnish. The same operation is repeated again and again until the plate is finished.

In preparing the gum copal it is, after being powdered, put through sieves which vary in fineness; the different parcels are kept in separate muslin bags, and used in succession, beginning with the finest, for if the coarsest powder had not a fine ground to rest upon, the shade produced by it would be very irregular.

Another mode of producing granulation is sometimes employed. It is that of dissolving the resin in spirits of wine, and pouring it over the plate in the same way as the liquid etching ground is used. On the drying of this solution, the contraction of the resin leaves small spaces of the copper exposed, and the biting-in is proceeded with as usual. The less resin there is in the solution the finer will be the grain thus produced.

In conclusion, I would remark that few plates produced by etching or the allied processes are published without being touched on with the graver; and that, on the other hand, hardly any engravings are carried through without material assistance from the acid at some stage of their progress. Instead, therefore, of making invidious comparisons between these sister arts, as is so often done, we would rather class them together, remembering the noble motto of our great sculptor, "I know of but one Art."